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MISCELLANEOUS.

88. Proposed by COOPER D. SCHMITT, A. M., Professor of Mathematics in University of Tennessee, Knoxville, Tenn.

Sum to infinity the series $5\cos\theta + \frac{7\cos 3\theta}{3!} + \frac{9\cos 5\theta}{5!} \ldots\ldots$

89. Proposed by G. B. M. ZERR, A. M., Ph. D., Professor of Mathematics and Science, Chester High School, Chester, Pa.

Find the earth's average density and mass, having given that the attraction of a ball of lead 2 feet in diameter, on a particle placed close to its surface, is less than the earth's attraction is the ratio 1 : 10250000, and that the density of lead is 11½ times that of water.

90. Proposed by DR. E. D. ROE, Jr., Elmira, N. Y.

I shot my rifle at different ranges and found the following table of elevations e, for the vernier peep sight, for the given distances s:

s	e
0	21.0
100	24.5
200	28.5
300	33.5
400	40.0
500	48.5

The distances are measured in yards. How shall a table of elevations be constructed, giving the arguments e, for every five yards up to 500 yards? Do not give the whole table, but explain the method, and illustrate by giving a computation, carrying the result to three places of decimals. An actual problem.

*** Solutions of these problems should be sent to J. M. Colaw not later than May 10.

BOOKS AND PERIODICALS

Synthetic Arithmetic. By Merritt S. Cook, C. E. 177 pages. Madison, Wis. Tracy, Gibbs & Co. 1899.

The following is the remarkable summary on the title page: "Containing many new principles and improved methods for computation of both simple and compound numbers, multiplication by methods of 'aliquot parts,' complements and partial products, division by substituted divisors, etc.; new method for *squaring* both simple and *compound* numbers, also mixed fractions; the 'basic' system of computing simple interest, by which no direct multiplication by the rate or time is required; also a symmetrical, comprehensive presentation of the Metrical System, aided by the use of algebraic symbols, together with new methods for conversion to and from the English system; finally brief articles on elements and problems connected with electro-motive and water power. Also various miscellaneous problems and new solutions both interesting and useful." We do not think